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Comments on potential recommendations on California petroleum market data reporting

April 2016

Petroleum Market Advisory Committee is seeking ways to improve data transparency in the gasoline and diesel markets in California

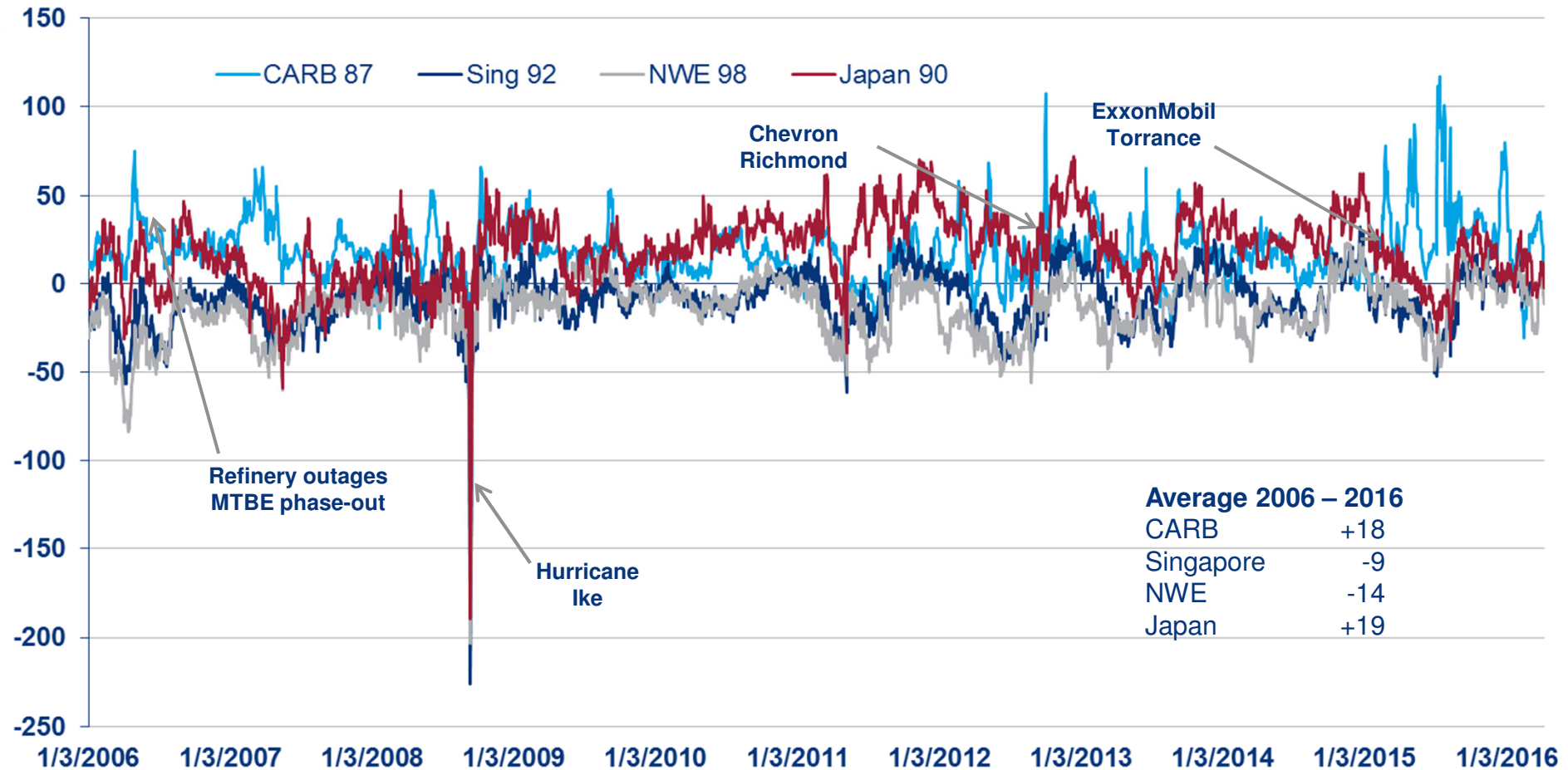
- ◆ Current suggestions under consideration by the PMAC include:
 - » Dealer Tank Wagon prices
 - » Notice of maintenance schedules
 - » Public inventory plans
 - » Estimates of unplanned maintenance repair timelines
 - » Real-time import and export tracking
- ◆ There is an underlying premise that more information will make California transportation fuel markets “better” (*e.g.*, lower price levels, less price volatility)
- ◆ Following are observations regarding if that premise might be correct

The US is recognized as the leading jurisdiction in petroleum market data reporting

- ◆ Many jurisdictions have very few reporting requirements or none at all
 - » Those that do tend to have reporting lags of at least three months and sometimes report only once per year
 - » By contrast, the US reports storage by product, by PADD every week
- ◆ European jurisdictions express concern that greater data availability enables non-physical players to participate in the market and risks greater price volatility
- ◆ Data reported in Asia tends to not be not consistent and thus not reliable for analysis
- ◆ One exception is publishing of refinery maintenance projects in Japan and Korea

Sudden surges in price levels tend to be driven by unforeseeable events, such as unplanned refinery outages

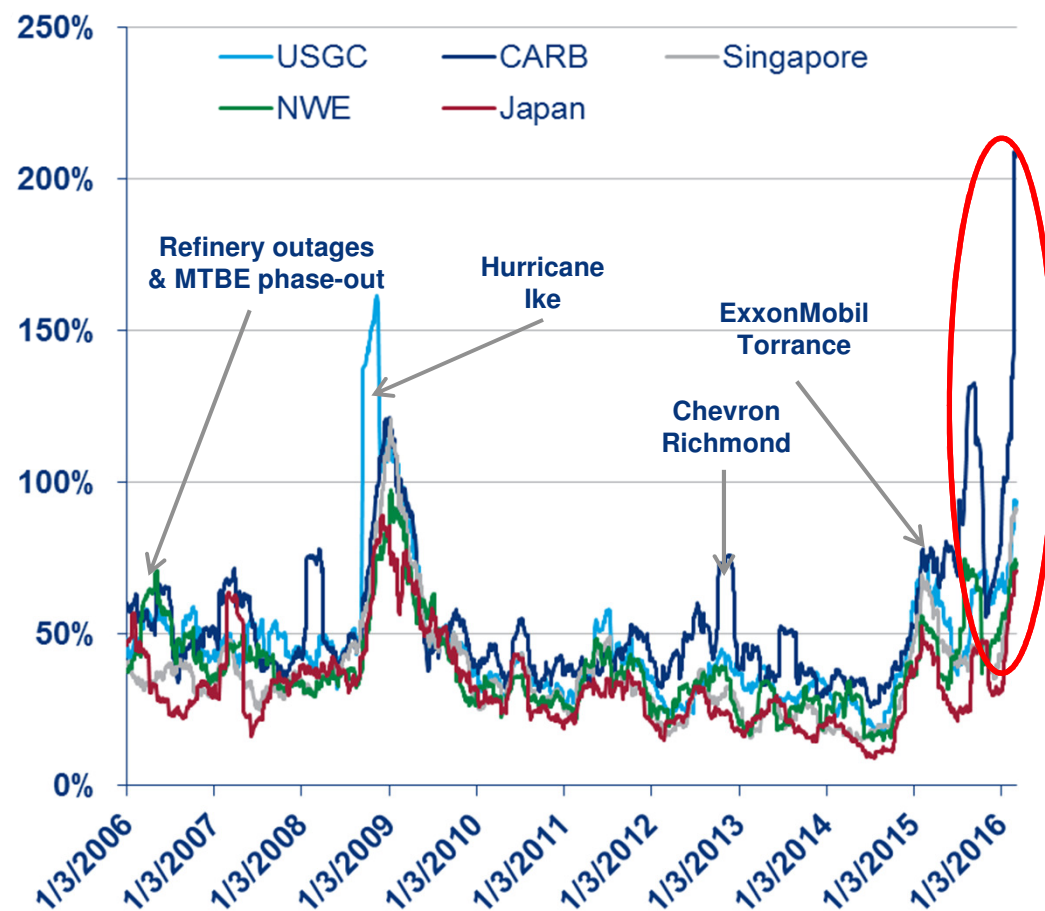
Gasoline Price Differential to US Gulf Coast (US cents per gallon; octane adjusted)



Source: Argus, Wood Mackenzie

Price volatility around the world is fairly similar until a sudden local event occurs (e.g., hurricanes)

Gasoline Price Volatility



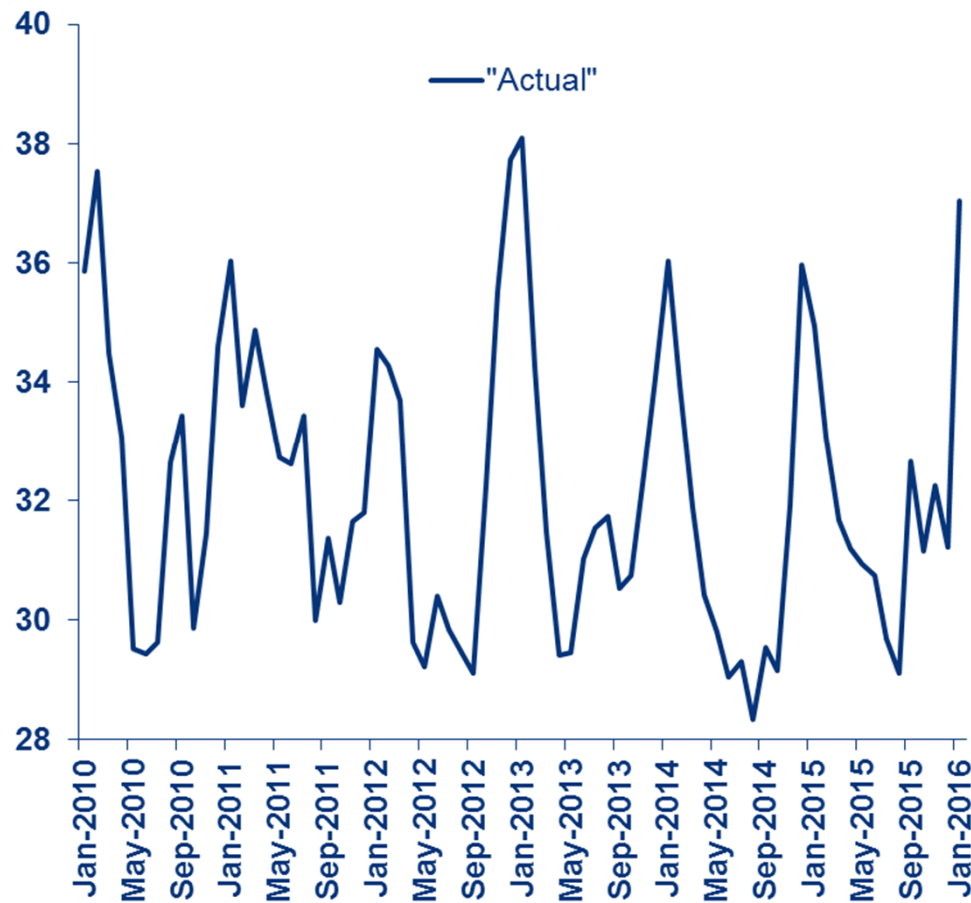
Source: Argus, Wood Mackenzie

- › Across the regions the rise in gasoline price volatility in 4Q15 – 1Q16 was driven by a 30% fall in crude oil prices after the December 4th OPEC meeting
- › California price volatility spiked higher because local prices fell much faster than other markets
- › Average price volatility 2006-2016

USGC	47%
CARB	55%
Singapore	38%
NWE	39%
Japan	33%

Changes in storage are not necessarily associated with unplanned capacity outages...

Company Storage (*illustrative*)

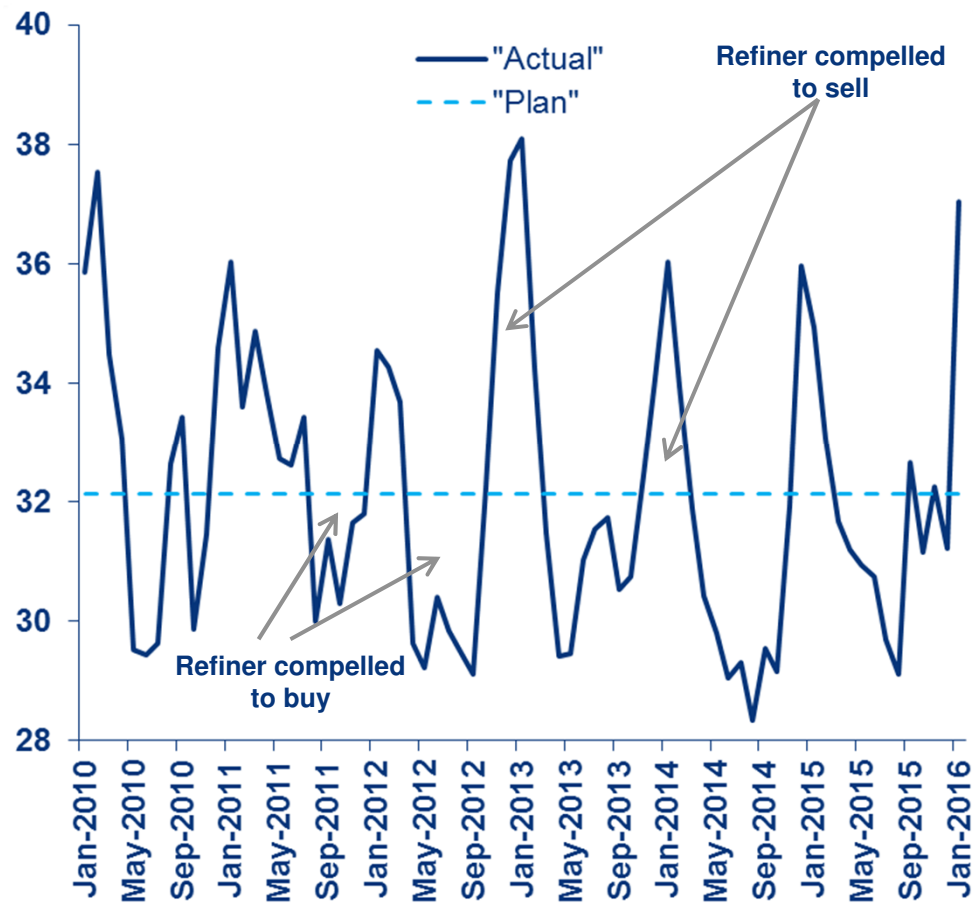


- › Storage volumes can change ahead of planned maintenance (build), changes in seasons (e.g., winter to summer gasoline grades)
- › This chart is an illustration of how a refiner's storage might change through time based on PADD V gasoline storage

Source: EIA; Wood Mackenzie

...however, revealing a company storage plan could put the operator at a competitive disadvantage

Company Storage (illustrative)



- › Illustrates data reporting concern in some European jurisdictions
- › Refiner would be disadvantaged relative to non-operating traders not required to report their storage positions
- › Ability of non-operators to jump in and out of the market could induce greater price volatility

Source: EIA; Wood Mackenzie

Unplanned outages, rather than data availability, appear to have a bigger impact on California's fuel price dynamics

Key takeaways

- By definition, unplanned outages cannot be foreseen nor predicted
- Additional data collection requirements would not reduce the likelihood of an operating issue within a refinery
- Additional data would not reduce price levels nor materially promote price stability



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